
ECO - REDUCED PRESSURE TEST APPARATUS



Introduction: The machine works on the Straube-Pfeiffer principal. Its purpose is to give visual indication of the gas content in aluminum prior casting. Molten aluminum sample is kept inside the specially designed SS chamber with a glass dome and the required vacuum is attained in between 10 and 15 seconds. The molten sample is kept under vacuum for about 5 minutes, and residual gas inside the sample is indicated on the upper surface of the sample as well as very prominently indicated as blow holes when the sample is cut/machined. The size & the number of blow holes will depend on the gas content of the sample.

The sample if cooled under atmospheric pressure will not indicate the gas content as the one which has been cooled/solidified under vacuum and would have wrongly passed quality check prior casting.

Technical Description:

Vacuum Chamber:



The main component of this machine, so designed as to withstand high vacuum, as well as to attain vacuum by merely closing the lid without any clamping required. The upper side of the chamber has a glass dome. The chamber is tested upto 5×10^{-6} Torr.

Vacuum Pump – A high vacuum pump, driven by a 0.5hp single phase motor.

Suction Filter – One of the main component responsible for making the machine almost maintenance free. The element is of stainless steel 25 micron mesh. The housing is designed in such a way that dismantling is done merely by opening only one butterfly nut. The whole cleaning process can be achieved by a semi-skilled person in a matter of minutes.

Vacuum Regulator – From feedback received from various users, it was found that various alloys require different level of vacuum. This can regulate the vacuum from 20 – 70 mbar (Effective range for vacuum sampling normally is between 70 – 90 mbar). A preset regulator is located inside the machine, not easily accessible to casual tampering.

Control Panel – Over-load protection for the motor is provided. Various LED indicators are mounted on the panel. The vacuum indication is thru a digital display & vacuum sensing is done by a vacuum (pressure) transmitter.